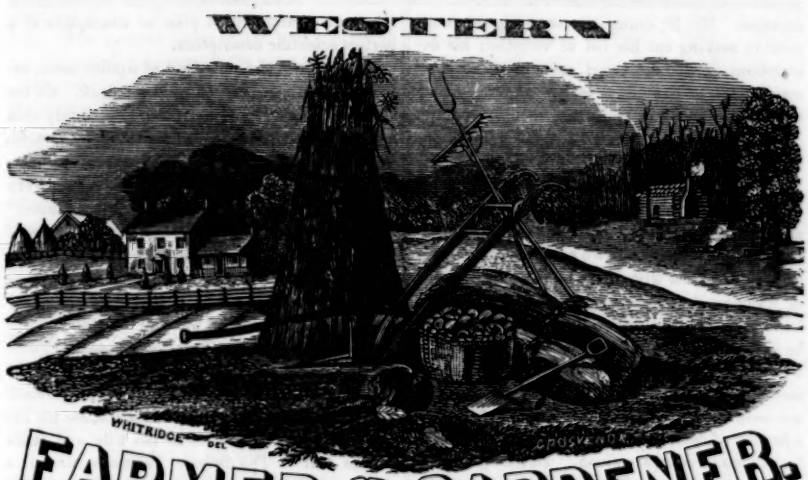

Vol. II. INDIANAPOLIS, Ia. MAY 1, 1846. No. 9.

EDITED BY
HENRY WARD BEECHER, Indianapolis,
EDWARD J. HOOPER, Cincinnati, Ohio.

S. V. B. NOEL, *Publisher and Printer.*

WESTERN FARMER AND GARDENER.

INDIANAPOLIS, FRIDAY, MAY 1, 1846.

☞Absence from home, and illness, afterwards, have prevented the editor from bestowing the usual amount of editorial labor upon the several late numbers of the paper. He hopes to contribute his share hereafter.

☞We have received from Mr. Longworth, of Cincinnati, an able pamphlet on the subject of the culture of the grape, and on the character and habits of the strawberry plant. It is well known that Mr. L. has been obliged to become the champion of the strawberry in respect to the character of the *flowers*. His theory seems to be reluctantly received in the east; but is very generally regarded in the west as correct. We have never had a a doubt upon the subject after reading his earlier communications and comparing his statements with nature. We shall have occasion to extract from this work.

Our thanks are due to L. Tucker, Esq., for a copy of the Fruit Culturist by J. J. Thomas, N. Y. We regard it as a very useful manual and we should be glad to see it in the hands of practical farmers through our part of the country. A plain, familiar, practical treatise upon the whole routine of fruit culture has been needed.

REVIEW OF DOWNING'S FRUIT AND FRUIT TREES OF AMERICA.

[The following article is a portion of a more extended one in the Albany Cultivator; as the editor found his own name to it there, he thought it no plagiarism to put it into the editorial columns of the Farmer and Gardener.]

When a book is hopelessly weak or incorrect, it should the the object of criticism to exterminate it. But when a work is admitted to be, upon the whole, well done, criticism ought to be an assistance to it, and not a hindrance. Praise by the wholesale is better for the publisher than for the reputation of the author; since, in a work like Downing's, every pomologist knows that perfection is not attainable, and indiscriminate eulogy inclines the better read critic to rebut the praise by a full development of the faults. Thus on one side there is general praise and faint blame; and on the other, faint praise and general blame.

We shall, at present, confine our attention to the catalogue of apples and pears, for all other fruits of our zone together are not of importance equal to these; and if an author excels in respect to these, his success will cover a multitude of sins in the treatment of small fruits, and fruits of short

duration. Mr. Downing has shown good judgment in making out his list of varieties; his descriptions, for the most part, seem to be from his own senses; he has added many interesting particulars in respect to fruits not recorded before, or else scattered in isolated sentences in magazines and journals.

But are his descriptions thorough and uniform? While he has added *materials* to pomology, has he advanced the *science* by reducing such materials to a consistent form? If we compare Mr. Downing's descriptions with those of Kenrick, or even of Manning, he excels them in fullness. If he be compared with classic European pomologists, he is decidedly inferior, both in the conception of what was to be done, and in a neat, systematic method of execution. Indeed Mr. Downing does not seem to have settled, before hand, in his mind, a *formula* of description; sometimes only three or four characteristics are given. Downing sins in excellent company. There is not an American pomological writer who appears to have *conceived*, even, of a systematic, scientific description of fruits. European authors, decidedly more explicit and minute than we are, have never reduced the descriptive part of the science to anything like regularity. We do not suppose that there can be such exact and constant dissimilarities detected between variety and variety of a species, as exists between species and species of a genus. We do not think a description of fruits to be imperfect therefore, merely because it is less distinctive than a description of plants. But the more variable and obscure the points of difference between two varieties, the more scrupulously careful must we be to seize them. Where differences are broad and uniform, science can afford to be careless, but not where they are vague and illusory. We can approximate a systematic accuracy. But it must be by making up in the *number* of determining circumstances, that which is wanting in the invariable distinctiveness of a few that are *specific*.

I. Downing's descriptions are quite *irregular* and *unequal*. Both his pears and apples are imperfect, but not alike imperfect. The descriptions of pears are decidedly in advance of those of the apple. It would seem as if the improvement which he gained by practice was very easily traced in its course on his pages.

Hardly two apples are described in reference to the same particulars. With respect to color of skin, size and form, eye and stem, he approaches the nearest to uniformity. But with respect to every other feature there is an utter want of regularity, which indicates not so much *carelessness* as the want of any settled plan or conception of a perfect scientific description.

We will, out of a multitude of similar cases, select a few as specimens of what we mean. Of the *Pumpkin Russet*, he says, "flesh exceedingly rich and sweet;" but he does not speak of its *texture*, whether coarse or fine; whether brittle or leathery. *Pomme de Neige*—"flesh remarkably white, very tender, juicy and good, with a slight perfume;" but is it sweet or sour, or subacid, or astringent? No one can tell by reading the joint descriptions of the *Red* and the *Yellow Ingestries* what their flavor is, since it is only said that they are "juicy and high flavored"—but whether the high flavored juice is sweet or sour, does not appear. These are not picked instances. They occur on almost every page of his list of apples. The *Summer Sweet Paradise* is, of course, sweet, since we are three times told of it, once in the title and twice in the text. The Sweet *Pearmain* also, is a "sweet apple" "of a very *sacharine* flavor." Of course it is *sweet*. Nos. 67, 68, 69, 74, 75, and very many more, are described without information as to their flavor except that, whatever it is, it is 'brisk,' or 'high,' or 'rich'—forlorn adjectives unaffianced to any substantive which they may qualify. Sometimes the health of the tree and its hardiness are given, and as often omitted. Some times its habit of bearing is mentioned, but oftener neglected. The color of the flesh is given in No. 82, but not in 83; in 84, but not in 85; from 86—92 inclusive, but not to the *second* 92, for the Bedfordshire Foundling and the Dutch Mignonne are both numbered 92. The color of the flesh is not given in 93, 97, 100, 101, 103, 110, although the intermediate numbers have it given. Why should one be minutely described, and not all? We should regard it an ungrateful requital for all the pleasure and profit which this volume has afforded us to hunt up and display what, to some, may seem to be mere "jots and tittles," were it not that these, in themselves, unimportant things mark decisively the absence in the author's *plan*, of a style of description which pomology always needed, but now begins imperiously to demand. And we are confident that a pomological manual *on the right design*, is yet to be written. Our hearty wish is, that Mr. Downing's revised edition may be that manual.

II. We are lead, from these remarks, to consider, by itself, the *imperfect scale* of descriptions adopted by all our American pomological writers, upon which Mr. D. has not materially improved.

The description of the *tree* is very meagre or totally neglected. *Nothing at all* is said of it in

cases out of the 174 apples numbered and described. The general shape of the tree is given in but *thirty-eight* instances in the same number.

The *color of the wood* is, usually, noticed in the accounts of pears; but in the account of apples in not one case, we should think, in ten.

The peculiar *growth of the young wood*, in a great majority of cases, is not noticed; but more frequently in the pear than in the apple list. The least practiced observer knows how striking is this feature of the face of a tree. We do not remember an instance where the *buds* have been employed as a characteristic. Are distinctive marks so numerous that such an one as this can be spared? The shape, color, size, prominence, and shoulder of buds, together with their interstitial spaces, form too remarkable a portion of trees to be absolutely overlooked in a book describing the "fruits and *fruit trees* of America."

Equally noticeable is the almost entire neglect of the *core and seed*, as identifying marks. Once in a while, as in the case of the Belle Fleur, the Roman Stem, the Spitzenberg, and the Pomme Royal, we are told, that the cores are hollow. But neither among pears or apples, is the core or seed made to be of any importance. This is the more remarkable as being a decided *retrocession* in the art of description. Prince, wisely following continental authors, is careful in his description of pears, to give, and with some minuteness, the peculiarities of the seed. But Downing, injudiciously misled by, in this respect, the decidedly bad example of British authors, has, almost without exception, neglected this noble criterion. There is not another single feature, either of fruit or fruit trees, which we could not spare better than the *core and seed*. Not only may varieties be marked by their seeds, but they form, in connection with the core, important elements of diagnosis of *qualities*. A long-keeper, usually has a very small, compact core, with few seeds. A highly improved and luscious pear, not unfrequently is wholly seedless; while fruits not far removed from the wild state abound in seeds. Whenever a *system of description* shall have been formed, we venture to predict that the *core and seed* will be ranked at a higher value in it than any one other element of discrimination and description.

The same neglect or casual notice is bestowed upon the *leaf*. If anything about it is remarkable it is mentioned, not otherwise: But is there a page of any book that was ever printed, that has more reading on it than is on a leaf, if one is only taught to read it? *It* too, is not only a sign of difference but very often of *quality*. Mr. D. has availed himself of this criterion in describing peaches.. Is it a legible sign only in the peach orchard? He that is ignorant of these marks, and only can tell one *fruit* from another, is yet in the a b c of pomology. Who but a tyro, on importing *Coe's Golden Drop*, would not at once perceive the imposition, if there was one, the moment his eye saw a bud, or its shoulder? Van Mons learned to select stocks for his experiments, as well by the wood and bud in winter, as by the leaf and growth of summer. In a large bed of seedlings every experimenter ought to know by wood and leaf what to select as prognosticating good fruit, and what to reject, without waiting to see the fruit. Nurserymen of our acquaintance, without book, label, or stake, can tell every well-known variety on their grounds. One of our acquaintance never had a mark, label, stake, or register, of any kind upon his ground; a culpable reliance on his ability to read tree-faces; for, on his throwing up the business suddenly, his successor fell into innumerable mistakes. It is just as easy for a pomologist to know the face of every variety, as for a shepherd to know the face of every sheep in his flock, or a grazier every animal of his herd.

III. Although the "Fruit and Fruit Trees of America" professes to give the process of management only for the *garden and the orchard*, it ought to include, and we presume was designed to embrace the essential features of nursery culture. Every cultivator of fruit must be a private nurseryman; he needs the same information, the same directions as if he were a commercial gardener. He that designs planting an orchard ought to know the *disposition* of each variety of fruit tree, that he may suit the circumstances of his soil, or provide for the peculiarities of a tree, as a farmer needs to know the peculiarities of the different breeds of hogs and cattle. With a large number of persons it would be enough to say of fruits,—"superb," "extra-superb," "superlatively grand," "extra magnificent;" for such, a *princely* catalogue would answer every purpose. But such as have some knowledge, and every year, we are happy to believe, the number of such increases, ask, not the author's bare eulogy, but a definite statement of all those special qualities on which such eulogy is founded. The exact *taste* of each variety of fruit should be studied in respect to soil; some, and but few, love strong clays; yet fewer thrive upon wet soils; but some will, as the Sweet or Carolina June, which does well on quite wet soils; some refuse their gifts except upon a warm and rich sand; some, and by far the greatest number, love a deep loam, with a subsoil moist without being wet. The buds of some varieties es-

cape the vernal frosts by their hardiness; some by putting forth later than their orchard brethren. Some varieties thrive admirably by ground or root grafting, while very many, so worked, are killed off during the first winter; some varieties, if budded, grow off with alacrity, others are dull and unwilling; some form their tops with facility and beauty; others, like many men, are rambling, awkward, and averse to any head at all. Some sorts, put upon what stock you will, have singularly massive roots; others have fine and slender ones. Every variety of tree has traits of disposition peculiar to itself; and in respect to traits possessed in common, even these may be classified. In every description there should be, at least, an attempt at giving these various nursery peculiarities. It cannot be done, as yet, with any considerable accuracy. *Fruit trees have not yet been minutely studied.* A florist can give you a thousand times more minute and special information in respect to the peculiar habits and wants of his flowers, than an orchardist can of his trees. Dobtless, it is easier to do it in plants which have a short period; whose whole life passes along before the eye every season, than in plants whose very youth outlasts ten generations of Dahlias, Pansies, Balsams, &c. But that only makes it the more important that we should be up and doing. Let no work be regarded as classic which does not take into its *design* the most thorough enunciation of all the peculiarities of fruits, and pomology will receive more advantage in ten years, than it could by a hundred years of rambling, unregulated, discursive descriptions.

The ability which Mr. D. has shown as a horticultural writer, his industry in collecting materials for this, his last work; the skill which he has shown himself to possess in describing fruits, give the public a right to expect that he will "go on unto perfection;" and if Mr. D. will adopt a higher standard and set out with a design of a more systematic description of fruits, every liberal cultivator in the land will be glad to put at his disposal whatever of minute observation he may possess.

COMMUNICATIONS.

PEAR TREE BLIGHT.

Mt. Jenner, near Versailles, Ia.,
March 30th, 1846.

Mr. Beecher: As the blight of the pear tree is a subject of great interest to us in the West, at the present time, all suggestions in reference to it, coming from competent sources, should be entitled to our regard. In a letter addressed to myself, from Wm. R. Prince, of Flushing, N. York, dated the 7th inst., he says that the "blight probably results from the roots which run deep striking water, or from the soil being too much sodden." He recommends to try "Pears on the quince stock for all moist soils, and pears on the pear stock only on dry soils." Whether this be the true cause or not, the opinions of so eminent a horticulturist should be entitled to our earnest consideration. Mr. Reagan, yourself, and many others in the West have imbibed the frost theory; but I trust that none of you will become so exclusive in this, as to prevent a further and careful inquiry for facts. That some pear trees are killed by a rupture of the bark on the trunk from freezing is certain, but whether or not Mr. Reagan's views are correct as to that form of blight which first shows itself in the topmost branches, I am not as yet able, from my own observation, to determine, but think I shall be the coming season. My trees all present the appearance described by him in a late number of your paper, as indicative of blight the coming season. Some of them I have pruned closely, sparing none of the last year's growth, others I shall leave to their fate.

In this country the blight has almost uniformly attacked trees which have attained a certain age and height, say from ten to fifteen years old; and three trees, six miles from my residence on poor and rolling ground, attained an age of twenty years, but blighted last season. Some trees, quite young, within my knowledge have blighted: but such cases are rare. Our subsoil here is a stiff clay. Last year, as opportunity offered, I exposed in various localities, the roots of blighted trees, and in every instance found death and rottenness of more or less of the main roots; but whether this is the cause or consequence of the blight in the branches, I will not now hazard an opinion. It would be gratifying if Mr. Reagan, Mr. Aldredge, and others, would, the coming season, carefully examine the roots of their blighted trees and report results, together with the kind of soil on which they stand, &c. Also, the age and height of the trees examined, as near as may be, and how long since the blight attacked, whether one, two, or more years since. Mr. Aldredge's pear orchard, if I recollect right, is on wet ground, and the blight has attacked it earlier than ordinary. Last fall, I examined in company with yourself, at Bloomington, Ia., an orchard of fifty trees, all in good condition save one, which was killed by rupture of the bark on the trunk—soil dry, and ground sloping. Yesterday I examined six trees in this county, standing in a row on wet land. They have been planted ten years, are of uniform size except one, which exceeds the others in height some five or six feet. Last year the topmost branches of this tree were attacked with blight, and I predict that the others will share the same fate on attaining a similar height. The oldest pear tree within my knowledge in this county, untouched as yet by blight, is, as near as can be ascertained, about twenty-five years old, and stands on the brink of a steep and high second bank of a creek; soil dry and gravelly. For the last two or three years I have paid particular attention to the pear tree in my travels through this county, and the result of my observations will warrant the following conclusions: First, that no location is exempt from blight. Second, on flat land the trees generally

blight in from ten to fifteen years. Third, on rolling and dry ground they often escape a few years longer. I would say to your readers in this region, that in my opinion, it is not advisable to go largely into the cultivation of the pear with a view to export; but that we may afford to produce it in sufficient quantity for home consumption. To do this with certainty, we should calculate on the loss of the tree in ten years after planted in the orchard, and make our arrangements accordingly. By selecting such varieties as come earliest into bearing, planting plenty of them, and recollecting to plant a new set every few years in anticipation of the death of the older ones, I can see no reason why we cannot keep up a supply of this fruit. It will cost us more labor and money, to be sure, than if the tree was long lived; but our friends, the nurserymen will lose nothing by this; and they who desire fine fruit, must not expect to have it without labor and attention.

Respectfully, &c.

W. T. S. Cornett.

REMARKS ON THE ABOVE.

If Mr. Cornett will go one step farther back than the proximate cause of the blight, (namely, the cold,) to *that condition of the wood*, which makes cold so deleterious upon the pear, he will have reached a point around which all the seemingly oppugnant and clashing phenomena of blight begin to come together with some show of order. It may be said generally, that *whatever produces a lax, loose, spongy growth of the wood*, prepares the tree for the blight. Rich bottom lands, moist soils, low lands, fat clays, highly manured orchard and garden soils, all these produce rank and rampant growth, and therefore an open and flabby texture. High, rolling lands, dry sandy soils, loams upon gravelly subsoils, usually afford a moderate growth of *compact* and fine grained wood.

Pear trees on the first-mentioned class of soils, will be constantly liable to blight; on the second class of soils, but seldom; and if ever blighted it will be by untimely freezing late in the SPRING, such as occurred in the spring of 1845.

This discrimination is one of vast importance. It indicates *the* PEAR SOIL. Instead of advising our readers to despair of having pears, we are quite confident, that wherever a farm contains a high, sandy, or other dry soil, on a dry subsoil, the pear may be planted with as much success as is the apple. Indeed, we do not know of any investment which could be made upon a farm better than the pear orchard.

We have had three successive years of blight. Every body is in a panic about it. There is danger that things will rush to extremes. Be quiet friends: we feel confident that the light is breaking on the causes of the trouble; and that with the clearing away of the mystery, there will be a plain indication of the right laws of cultivation appertaining to this princely fruit. Ed.

LETTERS OF A COSMOPOLITE---No. 6.

Washington, D. C., March 29, 1846.

Editors of Farmer and Gardener:—The incidents that attend a journey through our country are so numerous and interesting, that anything like a detail of them would prove voluminous, and not to be attempted by a letter-writer. A touch here and there is all one can do.

There is probably no better illustration of the vigorous vitality of our population, than is to be found in the *restored* city of Pittsburgh. A year ago she was almost in ruins; now a new city, elegant and convenient, has grown up, so that the old is no longer remembered. The chief landing for squares is all new, and the visitor finds only here and there a vacant corner that shows the devastation that so recently prevailed. The fire has not yet gone out in two cellars that are shown, and yet the "burnt district" is renewed and filled with busy men and rattling drays. None but Americans could have been so elastic under misfortune, or spring back so readily into the lap of comfort and prosperity whence they had been so rudely and recently thrown down.

Although Pittsburgh enjoys a reputation as a manufacturing city above that of Cincinnati, yet it does not justly belong to her in all branches of industry. In glass, cotton, and some branches of the iron manufacture she surpasses; but in machine building, fine founding, boat building, chemical products, shoe making, lead working, &c., she is very far behind Cincinnati.

The wire aqueduct, and bridge, and the city court house, are noble works unequalled in any other western city, of which Pittsburghers are and ought to be very proud, and the want of which should make Cincinnati blush.

Ascending the Monongahela (one of the sweetest names in America) one is struck with the immense amount of coal that is available along its banks. Every little hut and shanty seems to have its private coal cellar, exhaustless as the "widow's cruise," while every quarter of a mile or oftener, come the large workings whence comes the coal for transportation. An English geologist seeing these wonderfully available mines, and looking back to his own land, said, "English geology is all upside down; we go through stone, wood, and water to get what you Yankees have at your hand." And not without reason might he say so, familiar as he was with shafts and drifts a thousand feet below ground, flooded with water foul and dangerous to the miners, and costly to the owners.

The amount of travel along this route, owing to the recent injuries sustained by the Pennsylvania canals, is immense. From Brownsville to Cumberland seventeen coaches run every day full to overflowing; while the route over the mountains is so rough and the stage stock so weary by this unprecedented rush of passengers, that the journey is very tedious and wearisome. Nor does this route afford as fine mountain scenery as either the Virginia or the Pennsylvania. However, the traveller does now and then see a massy crag

or a ragged precipice even on this line, but not half as often as one longs for, if it were only to reward the fatigues of stage travelling.

Our party spent one night on the top of Laurel Hill, where we had expected to have found snow and ice. But judge of our surprise, when we arose in the morning, to find the forests all budding with the yellow green of spring; unaccountable this seemed until, as we rode more closely by them, we found that the color came from the moss that clung to every trunk, branch, and twig, giving a general spring-like hue to the whole forest.

How so many fine houses, and hearty people are sustained by the farming of such land as these mountain tops afford, I cannot tell. I asked the landlord what the good people did in the way of farming? "Oh a heap of things," said he; "we hunt a little and fish a little and farm a little." More of the land goes to small grain than is common at the west; some very fine little plats of wheat, green as a new-fledged collegian, were to be met with here and there, and some few lots, I judge, by the looks, had just been sown with oats. A courageous man must he have been, and full of hope, who first dared to sow good seed in these stony places and expect to reap a crop. Oh all ye western farmers that grumble at your hard work and small income, pass but one seed-time and harvest among the Alleghenies, and then go home to your western paradise all contented.

Well, before we got out of the mountains we came to Cumberland and the railroad, and after our twelve hours ride of only *fifty miles*, we were glad to try a fiery steed and driver, and race over 170 miles in the same time. A locomotive is more than a war-horse—nobler, stronger, swifter and of louder voice. No one machine, unless it be a time piece, has embodied in it so much of human ingenuity and perfected mechanical skill, as a modern locomotive engine. Still, however, neither watches nor engines are yet perfect, but he must be a shrewd man and a profound mechanician that can go any further. Americans have reason to be proud, too, that as builders of this finest of machines, they are unequalled in the whole world. American engines run on all roads in Europe and run the best—burning the least fuel, lasting the longest and looking the most symmetrical and highly finished. What a fact, when we reflect that twenty years ago there was not, probably, a locomotive in this country!

Well, we whirled along to Harper's Ferry, when we stopped to eat a *railroad dinner*; to do which in perfection, one must learn, cow-like, to eat first and chew afterwards. The tavern-keepers seem to understand this necessity, so they gave us slippery oysters, and they, as you know, can be swallowed *ad libitum* with or without mastication, as the operator may wish.

The scenery around this spot is so well known by the noble description given of it by Jefferson, that I cannot say a word in addition. Such a river, such green hills, such naked cliffs and frowning precipices are not to be found elsewhere in so close juxtaposition. Nature has thrown them all together as a sort of specimen card of her manufactures, and art has come in with a railroad, so that every body may come up and admire. But civilization spoils nature, and all her lovers mourn as they see her solitudes invaded and shorn of their native graces, even though they may become thereby more accessible.

On we rushed toward the "city of monuments," and as we drew near, we caught the first sight and sniff of salt water, and felt the first cut of an east wind, all of them grateful to a true Yankee, even though he be an adopted Hoosier.

But of the sights in Baltimore and Washington, I must write in my next. T. K. B.

BEAN SOUP.

Messrs. Editors: In No. 8, of the Farmer and Gardener, there is an inquiry made by "J. T. P.," one of your able correspondents, on behalf of a "female friend," relative to making *bean soup*. I judge from the inquiry made about the cooking so simple a dish, that your correspondent has never travelled in the Bay State. And the lady, were she to visit Indianapolis, might be introduced to a little yankee girl, twelve years of age, who could give her the necessary information relative to making *bean soup*.

No doubt "J. T. P." has heard of the little nursery tale of "Bean porridge hot, bean porridge cold," &c.: and though I have never eaten it "*nine* days old," I have *five;* and, like wine, age appears to improve it.

Bean soup of the West, is bean porridge of the East: so for the benefit of "J. T. P." and his "female friend," I will try and tell how "our folks" make bean soup, viz:

Take one quart of white beans, and put them to soak over night; in the morning drain off the water, and put them into an *iron vessel*, with four quarts of clear soft water; place them over the fire, and keep boiling gently for three hours, or till about half past ten o'clock; then add one pound of pickle pork, cut in thin slices, and keep boiling till noon, when they will be sufficiently cooked.

Where the family is small, half the quantity may be used: and if the quantity of beans is increased, the other ingredients should be added in the same ratio. Pepper, &c. may be introduced when served up, to suit the taste.

Beans are very nutritious, and are esteemed much by the people in the New England States, "any way you can fix 'em," whether baked, boiled, or stewed.

According to the analysis of Sir Humphrey Davy, "more than half their weight consists of principles fit for nutriment." Einhoff says, "ripe beans contain eighty-four per cent. of nutritive matter; of which fifty is pure farina, the rest chiefly gluten."

I searched for receipts for making bean soup *alias* bean porridge, but could find nothing that answered the purpose so well as the one I have long tested. I likewise examined Webster's Encyclopædia of "Domestic Economy and Housekeeping," a London work, that contains something over 1200 pages; and, as I could discover nothing satisfactory on the subject, the inference drawn is, that John Bull "don't know beans."

M.

Messrs. S. Appleton and J. A. Lowell, Esqrs., of Boston, Mass. have presented to the Massachusetts Horticultural Society $1,000 each, to be invested, and the income devoted to premiums for fruits and flowers.

BREEDING FROM NATIVE SHEEP.

In a late number of the Farmer and Gardener a "Beginner" makes inquiry as to the best sort of sheep for him to begin with. His first question is vague, both, as to the number he wishes to keep, and the kind of wool he is desirous of raising. His phrase is, "which (sort of sheep,) ought a man to have where wool is the object?" Is it fine wool for sale to the broad cloth manufacturer, long wool for the fabrication of worsted and mouslin de laine, or is it wool for domestic purposes? Hitherto Americans have imported their favorite breeds from Spain, Saxony, and England. I would advise the beginner to begin at the beginning. Spain and England have found breeds suited to their soil and climate, and to the particular localities on which they are raised. The breed has yet to be found suited to the peculiarities of the western hemisphere. I will suppose the "Beginner" to begin with a flock of 100 ewes. Let him select from the flocks of common sheep in his own neighborhood, 150 ewes two years old, if he finds it difficult to find all of that age, say two and three years. Select first for size, *robust form* and *quantity of wool.* To be sure of the latter quality, each individual sheep must be caught, and particularly examined, to see that the belly is as well clothed with wool as the back. The 150 ewes once at home, put them in good feed, and draw out from them fifty of the worst, in the following manner: After they have been at home a month or so, he may find a few that have not improved in condition, but which seem to do badly, *take them out for sale.* In examining the fleeces of the others, he will find a great variety of quality, from ten to thirty-five cents per pound. He will also find some sheep of fine size and form with abundance of wool of an even quality. If he is not practiced in selection, let him take three or four of these best sheep and put in a little pen by themselves. Put an equal number of the worst sheep in a pen by themselves. Now pick out fifty of the worst sheep those that are unthrifty, and have not improved in condition. Those that have bad wool, particularly those that have two kinds of wool in the same fleece, some of it approaching to hair, with a coat of wool below it. Those that are very coarse and hairy about the legs, and those that have coarse, light and open fleeces. In this way taking out one third of his worst sheep from his first selection, he will have left in his possession 100 superior ewes, of equal size and age, and with a heavy and uniform quality of fleece. He will then possess a flock of double value to his neighbors. Every succeeding year let him sell a fourth part of his ewes, and the inferior fourth part of his ewe lambs. If his selections are carried on with judgment, in a few years he will possess a superior and unique flock. His wool will be adapted to domestic purposes. The fleece will be heavy and command a medium price for sale. With this foundation he may now suit his fancy or judgment in the ram. Whether it be of the finer woolled family or that of the weighty fleece. If of the former, let him go to some breeder who has a variety, and select a poled ram with robust and square frame, and medium quality of fine wool, say worth forty to forty-five per pound. If the latter a South Down or a cross from a South Down. Or, if the experiment is not of too much trouble, put half the ewes to one description of ram and half to the other; and from their progeny he can tell which he likes best. I should advise him to avoid the Leicester, the Teeswater, and the Lincoln breeds altogether on account of their tender qualities.

It is from constant selections, from the native breed, with an occasional and judicious cross, that new breeds suited to soil, climate, and locality, will be discovered. A wide spread of cultivated grass is necessary to the cheap and successful management of sheep. I advise "Beginner," to allow his experience and judgment to grow up with his flock. The knowledge of useful arts is found in *recorded* and *unrecorded* experience. A reliance on the recorded knowledge, is to rely on the least half, and without the practical experience which is entirely apart from the theory, the mere recorded knowledge is of little avail. Sheep may be kept in many different ways. Fed in the most artificial manner, or kept entirely on grass. If the hay be very good, they will live on hay. Also better on hay and grain. With more economy, if labor is cheap and grain dear, with meal and chopped hay moistened. They may be slopped like cows and closely confined. Or they may live in abundant grass pastures all the year round. Find out then, the cheapest food the locality affords, and let the sheep tell the shepherd how much they require. At any rate by making well the first selection, "Beginner" will have a flock a hundred per cent. better than his neighbors. It will be a safer experiment than to go into any high breeds without a thorough knowledge of their qualities. F.

St. Maries, Jasper Ill., 1846.

"MAN OF THE EARTH."

The war of extermination threatened against this man excites my sympathy. Before he and his progeny are all destroyed, let his qualities be well examined. If he has a single good or nutritious quality, it may be extended and increased by care and cultivation, until it pervades the entire man. He may possess qualities for food; perhaps a strong poison, or a beautiful dye. Let him be planted in a sandy soil, in a stiff clay, in a rich cultivated garden: in a north and in a south aspect—try him in all situations. He is already a great man, (as large as my thigh,) and a modest man, keeping himself out of sight and harm's way. By care and cultivation of any good quality that he may possess, the man under the ground may be improved and changed in character, as completely as the man who moves on the surface of the ground, is changed by good habits and education, with this difference, that the Man of the Earth will hand down his good and improved qualities to the latest generation: whereas the living man often proves infirm of purpose, and always dies and is lost to his fellows in a few years.

Will not some of your correspondents take charge of the care and culture of this Man of the Earth for a few years; and give him a chance of being a good as well as a great man? If I meet with him I will assuredly become acquainted with him. F.

SELECTIONS.

CULTURE OF INDIAN CORN.

The circumstances most favorable to Indian corn, are a rich deep, and light soil, with a hot and moderately moist atmosphere.

Keeping in view the principles most congenial to the habits of the plant, we should prefer commencing the cultivation with the soil in a grass or clover sod. The disposition of the manure, if any is used, will next demand attention. The quantity proper to be applied depends on many circumstances—such as the condition of the soil, the whole quantity at the disposal of the farmer, and the requirements of his other crops. The plant will bear a large quantity, if it is intimately mixed with the soil, though the yield is no doubt sometimes lessened in a dry season from too much unfermented manure being used. While the weather is favorable, it induces a large growth of stalk, by which a proportionate degree of moisture is required; but the encouraging stimulous may be counteracted at another part of the season by the tendency of the manure to make the soil more dry than it otherwise would have been. Perhaps, as a general rule, it would not be advisable to apply over thirty two-horse loads of long barnyard manure in one season.

We should prefer that a part of the manure used should be pretty well rotted, and that the other portion should be in a fresher state. The latter we should spread on the sward before plowing, and turn it in with rather a shallow furrow — not exceeding the depth of four inches. The object being to keep the manure near the surface, that it may be the more readily acted on and rendered soluble by air and heat, we should merely cover it sufficiently to prevent loss by exhalation. If the soil should be so compact as to render expedient a deeper loosening than would be made by the common plow, we should use the sub-soil plow, running it in the furrow directly after the other. By using two teams, one following the other, the whole work may be carried along together without any interruption, and in many cases with not more than double the expense of plowing, in the usual mode. The particular advantages of subsoil plowing, it is not intended to discuss here, though it may be remarked that no doubt is entertained of its general utility.

The *time of plowing* must of course depend on the convenience of the farmer. If he has much to do, it is obvious that he cannot plow *all* his land at one time; but we believe experience has established the fact, that the best success has generally been obtained from plowing performed as near as practicable to the time of planting. This result is reasonably explained: the soil is kept in a more friable state through the season; the furrows not being beaten down and run together by heavy rains, as is often the case when the plowing is done earlier. The rotting of the sward takes place most readily when plowed after the grass has considerably started; the sap-vessels being then filled with juices which promote decomposition; and if the seed is planted at the time of plowing, the crop converts to its use, without waste, the gaseous food as fast as it is evolved.

We are aware that certain advantages are claimed for fall and winter plowing; the first of which may be said to be the greater leisure of the farmer at that season of the year; second, the destruction of insects; and third, the benefit of the soil by the action of frost. The first of these positions is undoubtedly correct, and the *convenience* of doing the work at this season, may go far towards counterbalancing some of the disadvantages, and in some cases may justify the practice. How much soundness there may be in the second position, we are not prepared to say. That insects are destroyed from being disturbed by the plow late in the fall or during the winter months, is probable; though it is thought that further and more accurate experiment than have yet been made are required to establish the advantage of fall plowing in this particular. As to the beneficial action of frost, it is admitted that soils of too adhesive a nature, may be so managed that they are thus rendered more open and friable; but to secure this benefit it is necessary to throw them into narrow ridges in such a manner that the water will be quickly thrown off; for it is only by the ground being frozen and thawed while comparatively dry and exposed to the air, that the pulverulent action of the frost takes place. If the surface is left level, the particles of the soil are soon run together by rains; and thus, in sward ground, the subvertion of the sod by fall plowing, only produces a greater degree of adhesiveness — increasing the very defect it was designed to remedy. Thus it appears that it is only *too heavy* soils, that can, under any management, be benefitted by fall plowing.

Mode of plowing.—For very light and loose soils, almost any sort of plow or any mode of plowing may answer for the purpose; but for compact and tenacious land, much depends on the implement and the manner in which this operation is performed. Several practices prevail in different parts of the country, which seem liable to objections. For instance, fields are often plowed by beginning on the outside and continuing to go round the lot till it is finished. The objections to this mode are several. It occasions inequalities in the surface of the ground, by the manner in which that portion moved by the plow is disposed of—gathering the richer portions into particular places, and making the soil thinner in other spots. Fields have been seen which had been so long plowed in this way that the ground near the fence or on the margin of the field, was raised several feet higher than the general level. In this mode of plowing also, the teams are obliged, in turning at the end of the furrows, to tread more or less on the plowed ground, so that there is a hard beaten strip of eight or ten feet in width on those portions of the lot where the furrows made in one direction end, and others commence. The soil also becomes thin at these places—the action of a plow at the beginning of a furrow, always throwing the earth a little forward; so that by the tread of the team and the gradual removal of the soil, these spots become at length comparatively barren.

A better mode of plowing is to commence by striking a furrow about a rod from the fence, on all sides of the lot, and then plow the field in "lands,"—completing the work by plowing the outside strip; in doing which the furrows should be commenced next the plowed portion—the team

passing round the lot and turning to the right till the work is done.

Other defects in plowing are, leaving portions of the soil between the furrows uncut and undisturbed, and also turning too wide furrows. The bad consequences of these practices are not so evident nor indeed so great on light sandy or gravelly land; but it will be admitted that the *best* plowing is that which approaches nearest to spade husbandry, and this can only be gained by an intimate division of the soil. Without laying down any specific rule for the width of furrows, it may be observed, that the heavier and more compact the soil, the finer it should be cut by the plow, in order to fully secure the object designed. It is the practice of some of the most judicious farmers, not to plow a wider furrow than ten inches, on soils of medium stiffness.

In plowing *sward* especially, the circumstances which favor decomposition, should be duly regarded. Science teaches, and practice and observation prove, that the action of heat and air is essential in effecting changes of animal and vegetable bodies. This important principle should be kept constantly in mind, and the inferences deducible from it, should direct to a proper performance of the work under consideration. The furrows should be laid lightly — being so disposed by the plow as to admit the access of air to the under side. If they are very wide, or are turned over too "dead," as it is sometimes expressed, they will press more closely on the subsoil, and the decomposition will go on but slowly—indeed in wet and cold lands it will scarcely take place at all.

Another advantage resulting from leaving the furrows as here mentioned, is the opportunity afforded for the escape of surplus water. This is in many cases of great consequence, for though a certain degree of moisture is favorable to decomposition, and to vegetable growth, yet it is well known that an excess is injurious.

Considerable controversy has at various times been carried on in regard to the relative advantages of "flat" and "angular" furrows. The objections to flat furrows, seem, however, to be much less in cases where the subsoil plow is used, and on porous soils, than under other circumstances. In the management of grass-land, it is the practice in some sections to plow them up when the grass declines in quantity, and sow the inverted sward immediately with grass seed. For this object the ground must be rendered sufficiently smooth to give a good bottom for the scythe, and for this it is necessary that the furrows should be considerably flat. The advocates of both these modes of plowing, however, generally agree in regard to one important requisite; that is the complete and effectual covering of all vegetation. If the grass is allowed to project between the furrows, it will grow, and not only prevent the sward from rotting, but will obstruct cultivation and injure the crop. There are, it is true, comparatively but few plows that are capable of performing, perfectly, the operation required; nevertheless there are some such, and the farmer would greatly promote his interest by using them.

Management after plowing. — In a preceding portion of this article, it was mentioned, that for the corn crop, a portion of the manure would be preferred in a rotten state. In this latitude, to which special allusion was made in this particular, the season of vegetation is at best but just long enough to fully mature the crop. It becomes then a matter of the first consideration to induce a rapid growth of the plant from the first start, in order that its maturity may be rendered certain. This, in fact, is the grand point, for if it is not gained, the labors of cultivation are performed in vain. The vegetable nutriment of manures is not available till decomposition commences; hence green or long manures cannot afford the plant in its early stages, the support which it requires; sustenance must therefore be provided from which it can be fed and nourished immediately. The rotted manure supplies this requisite. It should be spread on the surface after plowing, and harrowed in with a light sharp harrow. If the quantity applied is small, the benefit would probably be greater by depositing in the row or hill. By using the rotted manure on the surface and covering the other, as mentioned, the whole food of the crop is so disposed as to afford a regular supply in the ratio required by the increasing growth. At first the plant feeds on the old manure, and while that is becoming exhausted, the long manure and the vegetable matter of the sod are brought to a soluble state, and as the roots are extended an abundant pabulum of nourishment is obtained. The *exclusive* use of thoroughly rotted manure for Indian corn is not advisable—its action is not sufficiently lasting — it will throw the crop forward early, and make plenty of stalk, but is liable to become exhausted before the grain is formed. This is often the case with poudrette — it has in many cases proved insufficient to make a crop of corn without other manures, such as barnyard dung, or a decomposing sod. Used in connection with these substances, its benefit, when properly prepared, is undoubted.

Mode of planting. — The distance between the rows or hills, number of stalks to the hill, &c., must be determined principally by the character of the variety cultivated. The different kinds require space according to the size and height to which they are inclined to grow. The smaller the kind, the closer may be the planting. If planted thickly, considerable advantage will be gained by allowing the greatest space to rows running north and south, as free access to the light and heat of the sun is thus afforded. In drill planting, the medium-sized varieties usually cultivated in this latitude, (42½°,) require a space of three feet between the rows, and with this space one kernel may be allowed to every foot in the row, for a permanent stand. If land is very weedy, there is an advantage in planting so that the corn can be worked both ways; but to render this convenient, a less space than two and a half feet the narrowest way, would not be advisable, and three stalks might be allowed to a hill.

In the *selection of varieties* reference should be had to quality of soil as well to the nature of the climate. A variety inclined to produce large stalks should by no means be put on thin land; for the food of the crop might be so much exhausted in producing the stalk that the ear might fail for want of nourishment. A larger variety, however, than it would be advisable to plant, on thin land, may be profitably placed on that which is rich; but whether the kind chosen be large or

small, or calculated for rich or poor soil, it should be regarded as important that it have as little stalk and cob as possible in proportion to the size of the ear and the quantity of corn. A small cob, especially at the *butt*, is of much consequence. In this latitude, as before remarked, the ripening of corn is rather precarious, and a difference of only a few days in the maturing or drying of the grain, may seriously affect the value of the crop. Every one may have observed that the ears with a large cob and large butt, retain moisture and remain in a green state longer than those of an opposite description. This retention of moisture renders the corn liable to injury by moulding in the crib, or when standing in shocks, and also by the cob being frozen while in this state. The latter effect may be frequently noticed; on those ears which have been frozen while the cob was filled with sap or juice, the cob and the "chit" of the corn will be found black, and the kernel has in many cases lost its germinating power.

To provide against contingencies, (destruction by worms, birds, &c.,) it is proper to plant an extra number of kernels. After the corn has attained the height of six or eight inches and is out of danger, the supernumeraries may be pulled up, leaving only the desired number of stalks.

The *proper depth of covering* in planting corn, depends on the nature and dryness of the soils. The depth of an inch on some soils would be equal to several inches on others. A deeper covering than is actually necessary to produce healthy germination, is prejudicial to the growth of the plant, and considering all circumstances, there are but few cases where it would be advisable to cover corn more than two inches, and in very moist soils, a covering of only an inch would be preferred.

If the ground has been well prepared, and is free from stones, the corn may be well planted with a machine. Lewis' "Seed Planter" will perform well in such cases, and make a great saving of labor.

Time of planting.—The condition of the soil as to warmth and moisture, and the general forwardness of vegetation, must regulate the time of planting. From the variation of the seasons it is obvious that no particular *day* can be fixed on for this work. The rule said to have been followed by the Indians,—from whom we first obtained and learned the uses of this valuable esculent—was to plant when the leaves of the white oak had so far advanced as to show the form of a crow's foot. The ground has then acquired a good degree of warmth, germination is quick, and the growth rapid.

Culture of the crop while growing.—The first object should be to keep the ground light, and the crop clean from weeds. On light soils, the harrow and cultivator may accomplish this without much aid from the hoe; but operations must be commenced with one of these implements, (the harrow is perhaps preferable at first,) as soon as the corn appears above ground; and so frequently should the work be repeated as to allow no time for the weeds to start.

On soils which have a tendency to become too compact, tools must be used which will penetrate the ground to a considerable depth. It is the class of soils which bake under the action of the sun, that suffer most from drouth, and the crop can in no way be so well protected against injury from this cause, as by frequent stirring and loosening the soil, by which the tendency to become too solid is counteracted. An implement with teeth like a plow coulter, two or three in a frame, answers this purpose well. While the corn is small, it may be run very close to the stalks without injury, but as the size of the plant increases, and the roots extend, the implement must not run so near. In some sections, what is called a shovel plow is used, and when properly made, it is an excellent tool. The wings of the share should not be too widely spread, as this throws the ground too much into ridges; it should be calculated to cut or stir the ground without moving it much to the right or left. A good plow of this kind loosens the soil much more effectually than a common plow, leaves it lighter, and not thrown into ridges. Besides the objection of too much ridging the ground, the common plow leaves the substratum even heavier than it was before, instead of making it loose and light.

For any ground on which it is proper to raise Indian corn, level cultivation is decidedly preferred. It exposes less surface to be dried by the sun and air, more readily receives and retains moisture, permits the extension of the roots over the whole soil by which the plant is better nourished, and better strengthened against the force of winds. When ground is thrown into sharp ridges, as is done by the plow, many of the horizontal roots are scorched by the sun, and are necessarily so short as to afford the plant but little support as braces.

In cultivating sward, the sod ought not to be turned up the first season. The tools mentioned will sufficiently loosen the soil without bringing the grass to the surface, and the gases evolved by decomposition are not wasted in the air, but are taken up by the growing crop.

In the early stages of the growth of the crop, the soil can hardly be tilled too much. To keep down the weeds, which should be the primary object, some of the implements of culture should be often passed through the soil, till the crop becomes so large as to obtain full possession of the ground.

Harvesting.—The fact is well established that the aggregate value of the corn crop is greatest, when it is cut and properly cured in shock. The only objection to the practice is the difficulty sometimes experienced in drying. It sometimes happens that there is an unusual prevalence of wet weather immediately after cutting up the crop, which induces mouldiness in the grain and injures the fodder. Some varieties of corn are also cured with more difficulty in this way than others. This objection applies to those kinds in which the ears are produced close to the ground, and which have besides a large number of short suckers and leaves, that prevent the circulation of the air and hold the dampness.

Care should be taken that the shocks are not made too large, and that they are set as openly as possible at bottom. It may be observed, however, that with the tall varieties cultivated at the south and west, these precautions are hardly necessary. If the corn is rather green when cut, it is a good mode to make but a part of the shocks at a time, leaving a sufficient number of rows to make the

shocks of the desired size; and when the first is sufficiently dried, the remainder is cut and added. The shocks should stand to dry for a few days, if the weather will permit, before they are bound. In binding, the band should be placed as near the top of the shock as practicable, both for the better shedding of rain and allowing the shock to remain more open to the air.

The fodder of corn when well cured in this manner, is an excellent article for feeding cows or other stock in winter. An aker of stout corn is considered equal to an aker of good grass, in the value it affords in stockfeeding, exclusive of the grain.—*Alb. Cult.*

STRUCTURAL BOTANY

Applied to Horticulture.....Stem.

The stem is that part of a plant which is developed above ground, and which took an upward direction at the period of germination of the seed.

It consists of a wood axis, covered by bark having pores on its surface, bearing leaves with leaf buds in their axils, and producing flowers and fruits.

The points where leaves are borne are called *nodi*, knots; the spaces between the leaves are *internodia*, internodes.

The more erect a stem grows, the more vigorous it is; and the more it deviates from this direction to a horizontal or pendulous position, the less is it vigorous.

Some stems are developed under ground, such as the tubers of the potato and the cormus of the crocus, but they are known from roots by the presence of leaves, and regular leaf-buds upon their surface, as the shoots from the eye of the potato.

Stems increase in diameter in two ways.

Either by the addition of new matter to the outside of the wood and the inside of the bark; when they are *exogenous;* ex. oak.

Or by the addition of new matter to their inside, when they are *endogenous;* ex. cane palm.

In exogenous stems, the central portion, which is harder and darker than that at the circumference, is called *heart-wood;* while the exterior, which is softer and lighter, is called *alburnum* or *sap-wood.*

The inside of the bark of such stems has also the technical name of *liber.*

The heart-wood was, when young, alburnum, and afterwards changed its nature, by becoming the receptacle of certain secretions peculiar to the species.

Hence the greater durability of heart-wood than of sap-wood. While the latter is newly formed empty tissue, almost as perishable as bark itself, the former is protected against destruction by the introduction of secretions that become solid matter, which is often insoluble in water, and never permeable to air.

The secretions by which heart-wood is solidified are prepared in the leaves, whence they are sent downwards through the bark, and from the bark communicated to the central part of the stem.

The channels through which this communication takes place are called *medullary rays*, or *silver grain.*

Medullary rays are plates of cellular tissue, in a very compressed state, passing from the pith into the bark. They are what form the cross grain of most of our ornamental woods.

The wood itself is composed of tubes consising of woody fibre and vascular tissue, imbedded longitudinally in cellular substance.

This cellular substance only developes horizontally; and it is to it that the peculiar character of different kinds of wood is chiefly due.

For this reason the wood of the stock of a grafted plant will never become like that of its scion, although, as will be hereafter seen, the woody matter of the stock must all originate in the scion.

The stem of an exogenous plant may therefore be compared to a piece of linen, of which the weft is composed of cellular tissue, and the warp of of fibrous and vascular tissue.

In the spring and autumn a viscid juice is secreted between the wood and the liber, called the *cambium.*

This cambium appears to be the matter out of which the cellular horizontal substance of the stem is organised.

In endogenous stems, such as the palm, the portion at the circumference is harder than that in the centre; and there is no separable bark.

Their stems consist of bundles of woody matter, imbedded in cellular tissue, and composed of vascular tissue surrounded by woody fibre.

The stem is not only the depository of the peculiar secretions of species, but is also the medium through which the sap flows in its passage from the roots into the leaves.

In exogenous stems it probably rises through the bundles of wood, and descends through the cellular substance; but this is uncertain.

Stems have the power of propagating an individual only by means of their leaf-buds. If destitute of leaf-buds, they have no power of multiplication, except fortuitously.

Leaf-buds.

Leaf-buds are rudiments of branches, enclosed within scales, which are imperfectly formed leaves.

All the leaf-buds upon the same branch are constitutionally and anatomically the same.

They are of two kinds; viz., *regular* or *normal*, and *adventitious* or *latent.*

Regular leaf-buds are formed in the angle of the leaf and the stem, called the axil, at the origin of the leaf—all bodies growing in that angle, are called axillary.

They are capable of propagating the individual from which they originate.

They are at first nourished by the fluid lying in the pith, from which it is probable they take their rise, as may be seen in a cross slice of the pine made at a knot, or just at the axil, but they finally establish for themselves a communication with the soil by the woody matter which they send downwards.

Their force of development will be in proportion to their nourishment; and, consequently, when it is wished to procure a young shoot of unusual vigor, all other shoots in the vicinity are prevented growing, so as to accumulate for one shoot only all the food that would otherwise have been consumed by several.

Cutting back to a few eyes is an operation in pruning to produce the same effect, by directing

the sap, as it ascends, into two or three buds, instead of allowing it to expend itself upon all the others which are cut away.

It is better in many cases of flowering plants and fruits to rub off all buds but those wished to be left, before they become branches.

When leaf-buds grow, they develop in three directions; the one horizontal, the other upward, and the third downward.

The horizontal development is confined to the cellular system of the bark, pith, and medullary rays.

The upward and downward developments are confined to the woody fibre and vascular tissue.

In this respect they resemble seeds; from which they differ physiologically in propagating the individual, while seeds can only propagate the species.

When they disjoin from the stem that bears them, they are called *bulbs*.

In some plants, a bud, when separated from its stem, will grow and form a new plant, if placed in circumstances favorable to the preservation of its vital powers.

But this property seems confined to plants having a firm, woody, perennial stem.

Such buds, when detached from their parent stem, send roots downwards and a stem upwards.

But if the buds are not separated from the plant to which they belong, the matter they send downwards becomes wood and liber, and the stems they send upwards become branches. Hence it is said that wood and liber are formed by the roots of leaf-buds.

If no leaf-buds are called into action, there will be no addition of wood: and, consequently, the destruction or absence of leaf-buds is accompanied by the absence of wood; as is proved by a shoot, the upper buds of which are destroyed and the lower allowed to develop. The lower part of the shoot will increase in diameter; the upper will remain of its original dimensions.

The quantity of wood, therefore, depends upon the quantity of leaf-buds that develop.

It is of the greatest importance to bear this in mind in pruning timber trees; for excessive pruning must necessarily be injurious to the quantity of produce.

If a cutting with a leaf-bud on it be placed in circumstances fitted to the development of the latter, it will grow and become a new plant.

If this happens when the cutting is inserted in the earth, the new plant is said by gardeners *to be upon its own bottom*.

But if it happens when the cutting is applied to the dissevered end of another individual, called *a stock*, the roots are insinuated into the tissue of the stock, and a plant is said to *be grafted;* the cutting being called a *scion*.

There is, therefore, little difference between cuttings and scions, except that the former root into the earth, the latter into another plant.

But if a cutting of the same plant without a leaf-bud upon it be placed in the same circumstances, it will not grow, but will die.

Unless its vital powers are sufficient to enable it to develop an adventitious leaf-bud.

A leaf-bud separated from the stem will also become a new individual, if its vital energy is sufficiently powerful.

And this, whether it is planted in earth, into which it roots, like a cutting, or in a new individual to which it adheres and grows like a scion. In the former case it is called *an eye*, in the latter *a bud*.

Every leaf-bud has, therefore, its own distinct system of life, and of growth.

And as all the leaf-buds of an individual are exactly alike, it follows that a plant is a collection of a great number of distinct identical systems of life, and consequently a compound individual.

Regular leaf-buds being generated in the axils of the leaves, it is there that they are always to be sought.

And if they cannot be discovered by occular inspection, it may nevertheless be always inferred with confidence that they exist in such situations, and may possibly be called from their dormant state into life.

Hence, wherever the scar of a leaf, or the remains of a leaf, can be discovered, there it is to be understood that the rudiments exist of a system of life which may be, by favorable circumstances, called into action.

Hence, all parts upon which leaves have ever grown may be made use of for purposes of propagation.

From these considerations it appears that the most direct analogy between the animal and vegetable kingdoms is with the polypes of the former.

Adventitious leaf-buds are in all respects like regular leaf-buds, except that they are not formed at the axils of the leaves, but develop occasionally from all and any parts of the plant.

They are occasionally produced by roots, by solid wood, or even by leaves and flowers.

Hence, roots, solid wood, or even leaves and flowers may in particular cases be used as means of propagation.

But as the development of adventitious buds is extremely uncertain, such means of propagation can never be calculated on; and form no part of the *science* of cultivation.

The cause of the formation of adventitious leaf-buds is unknown.

From certain experiments it appears that they may be generated by sap in a state of great accumulation and activity.

Consequently, whatever tends to the accumulation of sap in an active state may be expected to be conducive to the formation of adventitious leaf-buds.

When a hard woody plant is cut down after transplantation, adventitious leaf-buds will start from all parts of the stem. They originate and are pushed out from the centre, and are caused by the accumulated sap.

The leaf-bud and the flower-bud are the same in the earliest stage of their organization, but soon after, the change takes place which is visible in most fruit trees as soon as the sap begins to flow.

The determination of these buds to leaf or blossom-buds, no doubt depends on the quantity and quality of the sap stored up during the winter. When excessive vigor is produced in trees, it is favorable to the production of leaf-buds, and consequently of wood. On the contrary, when rapid and vigorous vegetation is checked, blossom-buds, and consequently, fruit will be in abundance—thus, fruit is seldom borne on the thick

vigorous shoots of the peach, &c., but generally on the slender ones.

If an unproductive tree is transplanted, it often becomes productive from the check given.

In India and China, trees are brought to bear fruit by cutting the roots or exposing them to dryness.—*Testemacher's Elm. Horticult.*

THE DISEASES OF THE HORSE.

CONTINUED.

Worms in the intestines are not often productive of much mischief, excepting they exist in very great quantities. Small doses of emetic tartar with a little ginger may be given to the horse half an hour before his first meal, in order to expel the round white worm; and injections of linseed oil or aloes will usually remove the ascarides, or needle-worms.

The *respiratory passages* are all lined by the mucus membrane. *Catarrh*, or *cold*, inflammation of the upper air passages, should never be long neglected. A few mashes or a little medicine will usually remove it. If it is neglected, and occasionally in defiance of all treatment, it will degenerate into other diseases. The larynx may become the principal seat of inflammation. *Laryngitis* will be shown by extreme difficulty of breathing, accompanied by a strange roaring noise, and an evident enlargement and great tenderness of the larynx when felt externally. The windpipe must be opened in such case, and the best advice will be necessary. Sometimes the subdivisions of the trachea, before or when it first enters the lungs, will be the part affected, and we have *bronchitis*. This is characterized by a quick and hard breathing, and a peculiar wheezing sound, with the coughing up of mucus. Here, too, decisive measures must be adopted, and a skillful practitioner employed. His assistance is equally necessary in *distemper*, *influenza*, and *epidemic catarrh*, names indicating varieties of the same disease, and the product of atmospheric influence; differing to a certain degree in every season, but in all characterized by intense inflammation of the mucus surfaces, and rapid and utter prostration of strength, and in all demanding the abatement of that inflammation, and yet little expenditure of vital power.

Cough may degenerate into *inflammation of the lungs;* or this fearful malady may be developed without a single premonitory symptom, and prove fatal in twenty-four or even in twelve hours. It is mostly characterized by deathly coldness of the extremities, expansion of the nostril, redness of its lining membrane, singularly anxious countenance, constant gazing at the flank, and an unwillingness to move. A successful treatment of such a case can be founded only on the most prompt and fearless and decisive measures. The lancet should be freely used. Counter-irritants should follow as soon as the violence of the disease is in the slightest degree abated; sedatives must succeed to them, and fortunate will be he who often saves his patient after all the decisive symptoms of pneumonia are once developed.

Among the consequences of these severe affections of the lungs are *chronic cough*, not always much diminishing the usefulness of the horse, but strongly aggravated at times by any fresh accession of catarrh, and too often degenerating into *thick wind* which always materially interferes with the speed of the horse, and in a great proportion of cases terminates in broken wind. It is rare indeed that either of these diseases admits of cure. That obstruction in some part of the respiratory canal, which varies in almost every horse, and produces the peculiar sound termed *roaring*, is also rarely removed.

Glanders, the most destructive of all diseases to which the horse is exposed, is the consequence of breathing the atmosphere of foul and vitiated stables. It is the winding up of almost every other disease, and in every stage it is most contagious. Its most prominent symptoms are a small but constant discharge of sticky matter from the nose; an enlargement and induration of the glands beneath and within the lower jaw, on one or both sides, and, before the termination of the disease, chancrous inflammation of the nostril on the same side with the enlarged gland. Its contagiousness should never be forgotten, for if a glandered horse is once introduced into a stable, almost every inhabitant of that stable will, sooner or later, become infected and die.

The urinary and genital organs are also lined by mucus membranes. The horse is subject to *inflammation of the kidneys* from eating musty oats or mow-burnt hay, or from exposure to cold and injuries of the loins. Bleeding, physic, and counter irritants over the region of the loins should be had recourse to. *Diabetes*, or *profuse stalling*, is difficult to treat. The inflammation that may exist should first be subdued; and then opium, catechu, and the uva ursi administered. *Inflammation of the bladder* will be best alleviated by mucilaginous drinks of almost any kind. *Inflammation of the neck of the bladder*, evinced by the frequent and painful discharge of small quantities of urine, will yield only to the abstraction of blood and the exhibition of opium. A catheter may be easily passed into the bladder of the mare, and the urine evacuated, but it will require a skillful veterinary surgeon to effect this in the horse. *A stone in the bladder* is readily detected by the practitioner, and may be extracted with comparative ease. The sheath of the penis is often diseased from the presence of corrosive mucus matter. This may easily be removed with warm soap and water.

To the mucus membranes belong the conjunctival tunic of the eye, and the diseases of the eye may generally be here considered. A *scabby itchiness* on the edge of the eyelid may be cured by a diluted nitrated ointment of mercury. *Warts* should be cut off with the scissors, and the roots touched with lunar caustic. *Inflammation of the haw* should be abated by the employment of cooling lotions, but that useful defence of the eye should never, if possible, be removed. Common *ophthalmia* will yield as readily to cooling applications as inflammation of the same organ in any other animal; but there is another species of inflammation, commencing in the same way as the first, and for awhile apparently yielding to treatment, but which changes from eye to eye, and returns again and again, until blindness is produced in one or both organs of vision. The most frequent cause is hereditary predisposition. The reader cannot be too often reminded that the qualities

of the sire, good or bad, descend, and scarcely changed, to his offspring. How *moon-blindness* was first produced no one knows; but its continuance in our stables is to be traced to this cause principally, or almost alone, and it pursues its course until cataract is produced, for which there is no remedy. *Gutta serena*, (palsy of the optic nerve) is sometimes observed, and many have been deceived, for the eye retains its perfect transparency. Here, also, medical treatment is of no avail.

The serous membranes are of great importance. The brain and spinal marrow, with the origins of the nerves, are surrounded by them; so are the heart, the lungs, the intestinal canal, and the organs whose office it is to prepare the generative fluid.

Inflammation of the brain.—Mad staggers fall under this division. It is inflammation of the meninges, or envelops of the brain, produced by over exertion, or by any of the causes of general fever, and it is characterized by the wildest delirium. Nothing but the most profuse blood-letting, active purgation, and blistering the head, will afford the slightest hope of success.

Tetanus or *locked jaw* is a constant spasm of all the voluntary muscles, and particularly those of the neck, the spine, and the head, arising from the injury of some nervous fibril—that injury spreading to the origin of the nerve—the brain becoming affected, and universal and unbroken spasmodic action being the result. Bleeding, physicing, blistering the course of the spine, and the administration of opium in enormous doses, will alone give any chance of cure. *Epilepsy* is not a frequent disease in the horse, but it seldom admits of cure. It is also very apt to return at the most distant and uncertain intervals. *Palsy* is the suspension of nervous power. It is usually confined to the hinder limbs, and sometimes to one limb only. Bleeding, physicing, antimonial medicines, and blistering of the spine, are most likely to produce a cure, but they too often utterly fail of success. *Rabies*, or madness, is evidently a disease of the nervous system, and, once being developed, is altogether without remedy. The utter destruction of the bitten part with the lunar caustic, soon after the infliction of the wound, will, however, in a great majority of cases, prevent that development.

Pleurisy, or inflammation of the serous covering of the lungs and the lining of the cavity of the chest, is generally connected with inflammation of the substance of the lungs; but it occasionally exists independent of any state of those organs. The pulse is in this case hard and full, instead of being oppressed; the extremities are not so intensely cold as in pneumonia; the membrane of the nose is little reddened, and the sides are tender. It is of importance to distinguish accurately between the two, because in pleurisy more active purgation may be pursued, and the effect of counter irritants will be greater from their proximity to the seat of disease. Copious bleedings and sedatives here also should be had recourse to. It is in connection with pleurisy that a serous fluid is effused in the chest, the existence and extent of which may be ascertained by the practiced ear, and which, in many cases, may be safely evacuated.

The heart is surrounded by a serous membrane, the pericardium, that secretes a fluid, the interposition of which presents any injurious friction or concussion in the constant action of this organ. If this fluid increases to a great degree, it constitutes *dropsy of the heart*, and the action of the heart may be impeded or destroyed. In an early stage it is difficult to detect, and in every stage difficult to cure.

The heart itself is often diseased; it sympathizes with the inflammatory affection of every organ, and, therefore, is itself occasionally inflamed. *Carditis*, or *inflammation of the heart*, is characterized by the strength of its pulsations, the tremor of which can be seen, and the sound can be heard at a distance of several yards. Speedy and copious blood-letting will afford the only hope of cure in such a case.

The outer coat of the stomach and intestines is composed of a serous membrane, the peritoneum, which adds strength and firmness to their textures, attaches and supports and confines them in their respective places, and secretes a fluid that prevents all injurious friction between them. This coat is exceedingly subject to inflammation, which is somewhat gradual in its approach. The pulse is quickened, but small; the legs cold; the belly tender; there is constant pain, and every motion increases it; there is also rapid and great prostration of strength. These symptoms will sufficiently characterize *peritoneal inflammation*. Bleeding, aperient injections, and extensive counter irritation will afford the only hope of cure.

The time for *castration* varies according to the breed and destiny of the horse. On the farmer's colt it may be effected when the animal is not more than four or five months old, and it is comparatively seldom that a fatal case then occurs. For other horses, much depends on their growth, and particularly on the development of their fore quarters. Little improvement has been effected in the old mode of castrating, except the opening of the scrotum and the division of the cord by the knife, instead of the heated iron.

Synovial or *joint membranes* are interposed between the divisions of the bones, and frequently between the tendons, in order to secrete a certain fluid that shall facilitate motion and obviate friction. Occasionally the membrane is lascerated, and the synovia escapes. This is termed *opened joint*, and violent inflammation rapidly ensues. The duty of the practitioner is to close this opening as quickly as possible. Nothing is so effectual here as the application of the cautery. A great deal of inflammation and engorgement are produced around the opening, partially, if not altogether, closing it; or at least enabling the coagulated synovia to occupy and obliterate it. Perhaps, in order to secure the desired result, the whole of the joint should be blistered. After this a bandage should be firmly applied, and kept on as long as it is wanted. If there is any secondary eruption of the synovia, the cautery must again be had recourse to.

The Navicular Disease is a bruise, or inflammation, or perhaps destruction, of the cartilage of the navicular bone, where the flexor tendon of the foot passes over it in order to reach the coffin bone. The veterinary surgeon can alone ascertain the existence and proper treatment of this

disease. *Spavin* is an enlargement of the inner side of the hock. The splint-bones support the inferior layer of those of the hock, and as they sustain a very unequal degree of concussion and weight, the cartilaginous substance which unites them to the shank-bone takes on inflammation. It becomes bony instead of cartilaginous, and the disposition to this change being set up in the part, bony matter continues to be deposited, until a very considerable enlargement takes place, known by the name of *spavin*, and there is considerable lameness in the hock joint. The bony tumor is blistered, and probably fired, but there is no diminution of the lameness until the parts have adapted themselves, after a considerable process of time, to the altered duty required of them, and then the lameness materially diminishes, and the horse becomes, to a very considerable extent, useful. *Curb* is an enlargement of the back of the hock, three or four inches below its point. It is a strain of the ligament which there binds the tendons down in their place. The patient should be subjected to almost absolute rest; a blister should be applied over the back of the tumor, and, occasionally, firing will be requisite to complete the cure. Near the fetlock, and where the tendons are exposed to injury from pressure or friction, little bags or sacks are placed, from which a lubricating mucous fluid constantly escapes. In the violent tasks which the horse occasionally has to perform, these become bruised and inflamed, and enlarged and hardened, and are termed *windgalls*. They blemish the horse, but are no cause of lameness after the inflammation has subsided, unless they become very much enlarged. The cautery will then be the best cure. Immediately above the hock enlargements of a similar nature are sometimes found, and, as they project both inwardly and outwardly, they are termed *thorough-pins*. They are seldom a cause of lameness, but they indicate great and perhaps injurious exertion of the joint. On the inside of the hock a tumor of this kind, but of a more serious nature, is found. It is one of these enlarged mucous bags, but very deeply seated and subcutaneous vein of the hock passing over it. The course of the blood through the vein is thus in some measure arrested, and a portion of the vessel becomes distended. This is a serious evil, since, from the deep-seatedness of the mucous bag, it is almost impossible to act effectually upon it. It is termed *bog* or *blood spavin*.

The cellular tissue which fills the interstices of the various organs, or enters into their texture, is the seat of many diseases. From the badness of the harness, or the brutality of the attendant, the pole of the horse becomes contused. Inflammation is set up, considerable swelling ensues. An ulcerative process soon commences, and chasms and sinuses of the most frightful extent begin to be formed. The withers also are occasionally bruised, and the same process takes place there, and sinuses penetrate deep beneath the shoulder, and the bones of the withers are frequently exposed. These abscesses are termed *poll evil* and *fistulous withers*, and in the treatment of them the horse is often tortured to a dreadful extent. A better mode of management has, however, been introduced; setons are passed through the most dependent parts; no collection of sanious fluid is permitted to exist, and milder stimulants are applied to the surface of the ulcer.

An aescess of a peculiar character is found between the branches of the lower jaw in young horses. It is preceded by some degree of fever. It is usually slow in its progress, but at length it attains a considerable size, including the whole of the cellular tissue in that neighborhood. There is one uniform mass of tumefaction. This is *strangles*. It seems to be an effort of nature to get rid of something that oppresses the constitution, and the treatment of it is now simple and effectual. It is encouraged by fomentations and blisters. It is punctured as soon as the fluctuation of a fluid within it can be fairly detected—the puss speedily escapes, and there is an end of the matter.

(*To be continued.*)

SCALE INSECT ON FRUIT TREES.

We cut from the Pittsburgh Gazette, an article upon an insect which is beginning to depredate upon our Indiana orchards.

Within the last three years a new and formidable enemy to young apple and pear trees has appeared in our orchards, introduced probably by importations of trees from eastern nurseries.—This is the *coccus mali* (of Harris), or *scale insect* as it is commonly called. This insect appears in vast numbers upon the stock and branches of young trees and unless summarily dealt with upon its first appearance, greatly retards their growth, and in some instances, as I have observed in my own and neighboring orchards, wholly destroys them. It may be readily distinguished by its singular appearance, showing itself at all seasons of the year upon the young and succulent wood, in the shape of a minute oyster about the twelfth of an inch in length and about a sixteenth in breadth of a dull or creamy white color, and closely attached.—This is the tent or external covering of the insect. By the aid of a common watchmaker's microscope I have discovered twenty insects under one of these minute scales. Their color is a deep red or cochineal, and to the naked eye they present only the appearance of grains of red lead or triturated carmine, the color varying according to the age of the insect.

That an insect so minute could accomplish so much mischief, is almost incredible, but unfortunately many cultivators have had fatal experience of their powers. Each insect is armed with a sharp proboscis or piercer, with which it penetrates the tender bark and draws up the sap fom the integuments, quite into the wood, and in one season a thrifty tree may be wholly destroyed. Their capacity of multiplication is wonderful, and they are endowed with a length of life, not accorded to any other insect. I have noted the same scale on a tree for six months, and at the end of that time have found under it, fifteen or twenty living and active beings.

It is worthy of remark that this insect shows some eccentricity in its tastes. The Newtown Pippin, the Spitzenburgh, Putnam Russet and other rough barked trees are wholly exempt from its attacks, whilst it eagerly attaches itself to the Gates, the Early Harvest, Summer Pearmain, and generally to summer, and fall trees.

And now for the remedy, which is fortunately easy in accomplishment. Upon its first appearance on my trees, I washed every one infected,

with a solution of potash, (one pound to seven gallons of water, a stronger solution would be better) but as the treatment was commenced in the summer, when the trees were in full leaf, I could only have access to the main stock of the tree, whilst the branches were left untouched.—So far as the treatment went, it was instant and effectual in its results, not an insect remained on the parts subjected to the operation, nor have they dared to descend from the branches to the parts thus treated. But as the injury to the branches, was, from their tenderness, greater than to the stock, I found that I had accomplished but little, and was driven to inventive resources for a complete remedy. Accordingly I commenced early in the present month to wash every branch infected, with strong soap suds, or soft soap, which I think is better.

Now lest any one should immediately condemn this treatment as slow and impracticable, let me explain the method of its operation, I took one gallon of soft soap, which will be enough for one hundred trees, and saturating a small sponge, (a woollen rag will be nearly as good) I drew it from the junction of the branch to the extremity, taking care not to rub off the buds. By this means I was able to treat more than one hundred trees in one day, rubbing every limb. Some of the trees were in bearing and had to be reached by a ladder. I even smeared branches uninfected, because a tree is always benefitted by alkaline washes.

I need tell no experienced cultivator the result. Not a scale is now to be seen on my trees, and the bark and every other indication shows them to have been, apart from the object intended, greatly improved.

I regret that I was not able to communicate the result of this experiment sooner, but the cultivator may yet have time to follow the suggestion. I beg leave however to advise, that it should not be attempted when any, the remotest bursting of buds may be discerned in the trees; in such a state the wash recommended may prove too pungent to come in contact with the tender foliage. At such a season it is better to rely upon fumigations with tobacco, gum camphor, or even common charcoal. M. A. W.

Beaver County, Pa.

CONVENTION OF NURSERYMEN.

Mr. Editor—I noticed in reading the proceedings of the N. Y. State Ag. Society, recently held at Albany, that a committee is to be appointed to report to a future meeting, the names, and to procure drawings of thirty of the best varieties of the apple. In connection with this subject, I would venture to suggest for consideration, the propriety and importance of having a general convention of nurserymen and amateur fruit growers; and that such meeting be held at Auburn during the next State Fair.

Let every nurseryman and fruit grower bring with him, from all parts of the country—not only from this, but from other States—such specimens of fruit as they may possess; and I venture to say that it will add much to the interest of the show, and will undoubtedly be the means of doing much good, and perhaps very materially correct the nomenclature of fruits. I have no doubt but Pennsylvania, Ohio, Michigan, Indiana, Illinois, and Wisconsin, would all be well represented in such convention. The Eastern States I think will not be behind hand in the matter; and even John Bull will be there, and will talk quite as flippantly about fruits as he does now about Oregon.

I would not wish to be understood as saying that the convention should constitute the committee.

By no means. But let such committee meet with and take part in the discussion on fruits in said convention; where very much important information will be elicited from all parts of the country. Information which would be of immense importance to the public at large. Without wishing to assume any authority whatever of calling such convention, I merely fling out these suggestions for consideration. Pyrus.

Buffalo, Feb'y, 1846. Alb. Cult.

Courage.—It is a popular error to suppose that courage means courage in every thing. Put a hero on board a ship, at a five-barred gate, and if he is not used to hunting, he will turn pale. Put a fox-hunter on one of the Swiss chasms, over which a mountaineer springs like a roe, and his knees will knock under him. People are brave in the danger to which they accustom themselves, either in imagination or practice.

Witticism.—A school-master, who resides in Norfolk, having, by his exertions in the schoolroom, made himself thirsty, opened his desk to refresh himself with an apple, which he had not long before deposited there. To his disappointment, it was gone. Conjecturing that his wife had purloined it, he instantly despatched to her the following:

"Your mother, Eve, an apple stole;
But ate it not alone:
She gave a part to that dear soul
Of whom she was the bone.
I'd have my Eve at least as kind;
I therefore beg, dear madam,
You will another apple find,
And send it to your Adam."

CONTENTS OF THIS NUMBER.

Review of Downing's Fruit and Fruit Trees of America, - - - 129, 130, 131
Pear Tree Blight, - - - - - - 132
Letters of a Cosmopolite, - - - 133
Bean Soup, - - - - - - - 134
Breeding From Native Sheep, Man of the Earth, - - - - - - - 135
Culture of Indian Corn, - - 136, 137, 138
Structural Botany, - - - 139, 140
The Diseases of the Horse, - - 141, 142
Scale Insect on Fruit Trees, - - - 143
Convention of Nurserymen, Miscellaneous, 144

TERMS.—*The* Farmer and Gardener *is published* semi-monthly, *each number containing Sixteen royal octavo pages, at* one dollar *per annum per copy;* seventy-five cents *per copy for Four and less than Ten copies; and* fifty cents *for Ten or more copies to the same Post Office. All subscriptions* in advance.